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REPORT

OF THE

WATER BOARD

FOR THE YEAR 1892.



BOSTON :

CASHMAN, KEATING & CO., PRINTERS.

1893.

CITY OF CAMBRIDGE.

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CAMBRIDGE WATER BOARD.

1893.

CHESTER W. KINGSLEY, *President.*

Members of the Board.

LEANDER M. HANNUM (term expires 1893).

JOHN F. O'BRIEN (term expires 1894).

GEORGE H. HOWARD (term expires 1895).

JAMES M. W. HALL (term expires 1896).

CHESTER W. KINGSLEY (term expires 1897).

WALTER H. HARDING, Clerk.

HIRAM NEVONS, Superintendent of Works.

WALTER H. HARDING, Water Registrar.

Trustees of Sinking Fund of Water Loan.

THE MAYOR, CITY TREASURER AND PRESIDENT OF THE
COMMON COUNCIL, *ex-officiis.*

CAMBRIDGE WATER BOARD.

Date of election and length of service of members, 1865-93.

CHESTER W. KINGSLEY	1865-	(Now in Office)
JOHN SARGENT	1865-1871	
A. K. P. WELCH	1865-1871	
ROBERT DOUGLASS	1865-1871	
SAMUEL SLOCOMB	1865-1876	
Z. L. RAYMOND	1871-	
HENRY L. EUSTIS	1871-1885	
J. WARREN MERRILL	1871-1881	
GEORGE P. CARTER	1871-1883	
JOHN H. LEIGHTON	1876-1879	
KNOWLTON S. CHAFFEE	1879-1889	
JAMES M. W. HALL	1881-	(Now in Office)
LEANDER M. HANNUM	{ 1883-1884 1885-	(Now in Office)
JOHN F. O'BRIEN	1884-	(Now in Office)
GEORGE H. HOWARD	1889-	(Now in Office)

Presidents of the Board.

J. WARREN MERRILL	1865-1867	
EZRA PARMENTER	1867-	
JOHN SARGENT	1867-1871	
J. WARREN MERRILL	1871-1873	
CHESTER W. KINGSLEY	1873-1876	
GEORGE P. CARTER	1876-1883	
CHESTER W. KINGSLEY	1883-	(Now in Office)

REPORT OF THE CAMBRIDGE WATER BOARD.

To the Honorable the City Council of the City of Cambridge:—

GENTLEMEN,—The Water Board herewith submits to you its twenty-eighth annual report, being for the year ending Nov. 30, 1892.

Total Cost of the Water Works.

Cost of the Works Nov. 30, 1891, as per report of last year	\$2,934,389 28
Expended during the past year	260,825 10
Making the total cost to Nov. 30, 1892	<u>\$3,195,214 38</u>

Water Bond Account.

Whole amount of Water Bonds issued	\$2,984,900 00
Amount paid from the Sinking Fund	1,273,400 00
Leaving Water Bonds outstanding	<u>\$1,711,500 00</u>
From this deduct the present value of the Water Debt Sinking Fund, as per the Trustees' account	602,019 27
Leaving bonds to be provided for by the Sinking Fund in the future	<u>\$1,109,480 73</u>

Statements in brief of the transactions in connection with the Water Works for the year ending Nov. 30, 1892.

General Construction Account.

RECEIVED.

From bonds issued	\$70,000 00
From Premium on same	2,560 00
From advances, by the city, on appropriations made, but for which no bonds have been issued	1,635 47
From sale of ice houses, etc., at Fresh Pond	7,200 00
	<u>\$81,395 47</u>

EXPENDED.

On General Construction Account	<u>\$81,395 47</u>
---	--------------------

Stony Brook Construction Account.

RECEIVED.

From bonds issued	\$75,000 00
From Premium on same	4,567 50
From G. F. Haynes, Attorney for Nathaniel Sibley, being for one-half the amount paid by the city for stenographic reports	415 85
	<u>\$79,983 35</u>

EXPENDED.

For settlement of estates taken, etc.	\$71,727 32
Paid cash advanced by the city last year	4,401 33
Balance of appropriation carried to new account	3,854 70
	<u>\$79,983 35</u>

Fresh Pond Land Purchase Account.

RECEIVED.

Balance of the appropriation from 1891	\$11,594 55
From bonds issued	125,000 00
Premium on bonds sold	5,712 50
	<u>\$142,307 05</u>

EXPENDED.

For purchases and settlement for estates taken bordering on Fresh Pond	\$107,702 31
Balance unexpended carried to new account	34,604 74
	<u>\$142,307 05</u>

Water Rates, Fines and Supply Account.

RECEIVED.

From water rates	\$239,012 50
Less rates refunded	1,485 42
	<u>\$237,527 08</u>
Shutting off, setting on, sealing, fines and rent	1,458 96
From supply account	7,002 39
Accrued interest on bonds sold	925 01
From sale of hay, fruit, etc.	413 50
	<u>\$247,326 94</u>

EXPENDED.

For maintenance account	\$46,733 13
Supply account	7,300 86
Interest on Water Bonds	88,165 00
<i>Amount carried forward</i>	<u>\$142,198 99</u>

<i>Amount brought forward</i>	\$142,198 99
Interest paid into the Sinking Fund, being $3\frac{1}{2}$ per cent. on \$1,776,500	62,177 50
Rent of box in safe deposit, for Sinking Fund	20 00
Amount transferred to the Street Department by the City Council, to build Grove, Adams and Cushing Streets	10,000 00
Amount transferred from the surplus receipts to Construction Account	4,909 01
Balance carried to the Water Bond Sinking Fund	28,021 44
	<u>\$247,326 94</u>

Comparative Statement of Receipts.

Water Rates for the year 1892	\$237,527 08
Water Rates for the year 1891	227,054 53
Showing increase of Water Rates in 1892	<u>\$10,472 55</u>

Comparative Water Supplied.

	Gallons.
Amount of water pumped in 1892	1,961,362,760
Amount of water pumped in 1891	1,778,056,773
Showing an increase in 1892	<u>183,305,987</u>

How the Water was Used.

	Gallons.
Amount of water sold by meter	430,125,000
Amount used in watering streets	75,837,625
Amount used for domestic use, fires, fountains, and all other purposes	1,455,400,135
	<u>1,961,362,760</u>

Statement of Daily Consumption.

	Gallons.
Daily average pumping for the high service through the stand pipe	486,513
Daily average pumping for the low service through the reservoir	4,872,402
	<u>5,358,915</u>

Table showing the Increase of the Consumption of Water during the past Five Years.

	Gallons	Daily Consumption	Daily Increase
Amount pumped in 1888	1,514,483,582	4,137,947	276,547
Amount pumped in 1889	1,526,439,005	4,182,025	44,078
Amount pumped in 1890	1,638,550,512	4,489,180	307,155
Amount pumped in 1891	1,778,056,773	4,871,389	382,209
Amount pumped in 1892	1,961,362,760	5,358,915	487,526

The above table shows at a glance the total increase of water consumed year by year for the past five years, also the daily average increase in water used in the city. At this rate of increase, it will not be many years when the capacity of our main conduit between Stony Brook and Fresh Pond Reservoir will be fully reached, and a new additional main pipe will have to be put in.

Comparative Rainfall and Height of Water in the Fresh Pond Reservoir for the past Five Years.

Months.	Rainfall.					Water in the reservoir below High water mark 16.85.				
	1888	1889	1890	1891	1892	1888	1889	1890	1891	1892
	In.	In.	In.	In.	In.	Feet	Feet	Feet	Feet	Feet
December, 1891	4.22	6.67	3.36	4.40	6.78	8.55	.91	1.10	.58	1.63
January, 1892	3.32	6.64	2.94	6.68	4.32	5.37	.55	1.62	.72	.73
February, "	3.95	2.81	5.22	4.61	2.46	3.69	1.07	1.20	.59	1.05
March, "	5.55	3.29	7.02	5.74	3.56	1.72	1.03	1.06	.32	1.27
April, "	2.60	3.73	4.83	2.72	.77	1.14	.88	.32	.30	.98
May, "	6.36	5.65	6.09	2.44	6.06	.61	.87	.67	.31	.50
June, "	3.25	3.44	3.51	4.01	4.23	1.12	.62	1.01	1.05	.48
July, "	2.87	8.53	2.77	3.06	2.53	2.39	1.28	2.32	2.15	1.87
August, "	7.08	3.78	3.48	3.68	6.11	3.75	.84	2.17	3.96	3.74
September, "	8.28	5.30	4.05	2.73	1.84	3.24	2.06	1.92	3.57	3.07
October, "	4.83	3.73	9.31	5.10	2.15	1.37	2.81	2.06	2.51	3.42
November, "	7.70	6.51	1.28	3.08	4.04	1.25	1.75	.94	2.27	3.96
Totals	60.01	60.08	53.80	44.25	44.85	2.87	1.22	1.36	1.53	1.89

It will be seen by the above table that the rainfall was the least the last year of any since the Stony Brook water was let into Fresh Pond Reservoir, and this with the large increase in consumption in part accounts for the less amount of water running to waste over the dam.

Stony Brook Water Supply.

By the record that we keep it was ascertained that the water wasting over the dam at Stony Brook into Charles River, was about 2,700,000,000 gallons. There was no water running over the dam during August, September, October and November. During these months we drew down the Stony Brook Basin some eleven feet, to supply Fresh Pond Reservoir. It is more and more apparent that with the increasing consumption of water in our city, we shall need all the use and capacity of the Stony Brook Storage Basin to meet the demands for water, with the prospect that before many years we shall need an additional source of supply to carry us over the dry months of the year, and later on to supply the rapidly increasing consumption of water caused by the growth of the city, and the additional manufacturing interests that are being established among us.

Around Fresh Pond Reservoir.

During the year all the buildings around the reservoir have been removed (except one kept for our own use); some eleven acres of low, swampy, unsightly land, in that taken from Dr. Somers, has been filled and graded, requiring about 70,000 cubic yards of material, and this is now being covered with loam, requiring about 10,000 cubic yards; after this it will be sown with grass seed, and instead of the stagnant, slimy water that formerly covered this tract in close proximity to our reservoir, we shall have a clean green field. There are other places around the reservoir that must be treated in the same way. These places are too low to drain, and must be filled. Black Nook, the swamps on the Black land, and on Mrs. Gay's, are the worst places left. When all are filled, the entire surroundings of Fresh Pond Reservoir will present a clean, neat and pleasant appearance.

Land Taken Around Fresh Pond.

During the past year settlements have been made with Mr. Smith and the Boston Ice Company, both based on the Commissioners'

awards. All the purchases and takings around the pond made previous to the last year, are now settled and paid, except the Dr. Somers' claim. This claim has been appealed from the Commissioners' award, which we considered excessive, and which we did not feel justified in accepting. During the past year we made a taking on Strawberry Hill, which we thought it was necessary to have, in order to protect our water supply from buildings too near our reservoir. This is the last taking authorized under the Act of 1888, and will enable us to construct a public street outside our reservoir grounds, so that no buildings can be erected between such street and the reservoir, on any side, except where the building is for our own use, and under our full control.

High Service Supply.

For some time past there has been well grounded complaints by people living on the high lands of Cambridge, in regard to their supply of water. During the year we have procured a new high service pump, from the Blake Pump Manufacturing Co., of much larger capacity than the old pump. This new pump we are now running day and night. This gives great satisfaction to our high service customers, and meets a long felt want with them. The old pump will now be thoroughly repaired and placed in the basement to be used as a duplicate in case of need. This change will clear the way and make room for the erection of a large pump in the centre of the Engine House which will be required when the reservoir on Payson Hill is completed and a general high service is adopted for the whole city.

Looking Forward.

It having become evident that with the increased and constantly increasing consumption of water in our city, by which the pressure is reduced more or less in all parts of the city by the large drafts made on our pipes, the Board decided that the time had come when a general higher service must soon be provided for the whole city. As there were but few convenient places for a high service reservoir, we visited all the places that seemed at all eligible, and decided that on the whole Payson Hill was the best. We therefore made a taking of about eleven and one-half acres at that place. This taking was unanimously approved by the City Council, and thus the site secured.

It is not the intention of the Board to ask for an appropriation the coming year to build this reservoir, but the City Engineer will, as he finds time, make us a plan of such a reservoir as he would recommend for the place. When we change to a general high service besides the reservoir, we must have a new and large high service pump, new conduit leading from the engine house to the high reservoir, all to be connected with our present distributing pipes leading over the city. When done it will add greatly to our protection against fire, as the pressure at any hydrant in the lower part of the city will be sufficient to throw a stream through a hose over any ordinary building without the help of a steamer, and besides it will greatly add to the efficiency of our fire steamers when in use.

Adams and Grove Streets.

By an Act of the Legislature the city was bound through its Water Board or other agents to make these streets "forty feet wide and put them in good condition." This work has been done the past season by the Street Department, and \$10,000.00 appropriated from the water rates by the City Council to pay for the same. At the same time with this appropriation the Street Department have greatly improved Cushing Street, from Grove to Mt. Auburn Streets, which was much needed.

Extension of Huron Street.

During this year an iron bridge has been contracted for by this Board, which is nearly completed, over the Watertown Branch of the Fitchburg Railroad, connecting Huron Street extended with the land devoted to a street seventy feet wide, which runs from this bridge to Cushing Street near the Shooting Range. We shall ask for an appropriation, to be met by the surplus water rates, to enable us to build one portion of what is to be a most beautiful avenue, seventy feet wide, from Concord Avenue and Sparks Street, and also to build another bridge over our pipe line, leading from Holworthy Street to the Gate House on the borders of the reservoir, which is opposite the fountain where the Stony Brook water comes into our storage basin.

Work that should be done the Coming Year.

First, The work of filling and grading the low places around Fresh Pond Reservoir should be continued and prosecuted with all possible dispatch until it is completed.

Second, The extension of Huron Street to Cushing Street should be commenced in the early spring, including a contract for a bridge over our pipe line, so that our part of this new avenue may be completed as soon as the other part is done. When it is all done, we would recommend that it be named Fresh Pond Avenue, from Concord Avenue to Concord Avenue, including a part of Sparks Street, all of Huron Street, and parts of Cushing, Grove and Adams Streets. This would make, with Concord Avenue on one side, a complete outside public avenue nearly all around our Fresh Pond Reservoir grounds.

Third, Finish the driveway on the border of the reservoir, opposite the Boston Ice Company's former grounds, and rip-rap the shores, filling the nook of the pond that was between the ice houses, and in this connection arrange for the removal of the Fitchburg Railroad track that runs in here, and grade the land now occupied under and near the track.

Fourth, Have a new roof of copper put on the engine house in place of the tin, leaky and worn-out one there now. Also put an iron balustrade in the place of the wooden and partly rotten one that is there now.

Fifth, Provide a house for our engineer, either by moving the one in the Grove and altering it to suit, or else sell the old house and build a new one of a more modern design.

Sixth, The work of renewal of main pipes in streets where they are now too small, and in many places are nearly full incrustations, should be continued. During the past year more than 13,600 feet of such renewals have been made, and this work should not stop until all our pipes are of sufficient size and in good order.

Reference to other Reports.

For the detailed statement, more fully than we have given it, of what has been done and the present condition of our Water Works, we would refer you to the reports of our Superintendent, Registrar and Pumping Engineer to us, which we herewith transmit to you as a part of our report to you.

General Remarks.

It affords us pleasure to testify to the competent and faithful work of our Superintendent, who early and late is found at the post of duty, making duty always a pleasure. The Registrar has his

office work well in hand, and can readily answer all questions pertaining to the accounts connected with the Water Works accounts. Our Pumping Engineer has been of especial value the past year in looking after the erection of the new high service pump. The City Engineer and City Solicitor have rendered valuable and cheerful service when needed in their departments, and all our regular employés have served with credit to themselves in the interest of the city.

All of which is respectfully submitted,

C. W. KINGSLEY,	} <i>Cambridge</i> <i>Water</i> <i>Board.</i>
L. M. HANNUM,	
JOHN F. O'BRIEN,	
JAS. M. W. HALL,	
GEO. H. HOWARD,	

REPORT OF THE WATER REGISTRAR.

WATER REGISTRAR'S OFFICE,
CAMBRIDGE, Dec. 9, 1892.

To the Cambridge Water Board:—

In compliance with the requirements of the City Ordinance, I present the twenty-eighth annual report of the operations of this department, showing the receipts, expenditures and abatements, together with a statement of the number of water takers, etc., for the year ending Nov. 30, 1892.

Amount of bills remaining unpaid Nov. 30, 1891:—

Water rates	\$532 45
Meter rates	158 83
Supplies and repairs	2,196 41
Off and on	47 00
Seals	5 75
Rent	8 00

Amount of bills placed in hands of City
Treasurer for collection from Nov. 30, 1891,
to Nov. 30, 1892:—

Water rates	187,008 65
Meter rates	55,337 30
Supplies and repairs	6,632 62
Off and on water, rents, seals and fines	1,480 21
Total bills	<u>\$253,407 22</u>

There have been collected:—

Water rates	\$239,012 50
Off and on water, rents, seals and fines	1,458 96
Supplies and repairs	7,002 39

There have been abated:—

Water rates	3,003 35
Supplies and repairs	40 98

Amount carried forward \$250,518 18

Amount brought forward \$250,518 18

There remain unpaid : —

Water rates	670 40	
Meter rates	358 98	
Supplies and repairs	1,785 66	
Off and on	55 00	
Seals	3 00	
Rent	16 00	
	<hr/>	\$253,407 22

Expenditures.

Construction account (Stony Brook)	\$71,727 32	
Construction account (Fresh Pond Land)	107,702 31	
Construction account (general)	81,395 47	
Maintenance account, viz. :—		
Care and repairs	\$27,308 93	
Pumping service	13,503 51	
Office expenses	3,920 69	
Rent of offices and shop	2,000 00	
	<hr/>	46,733 13
Supply and repair account	7,300 86	
	<hr/>	\$314,859 09

Abatements.

Water rate bills to the amount of	\$3,003 35	
Supply and repair bills to the amount of	40 98	
	<hr/>	3,044 33

Refunds.

Water rates to the amount of	\$1,485 42	
Which amount deducted from the receipts	239,012 50	
	<hr/>	237,527 08
Leaves net receipts for water	1,458 96	
Add off and on water, rents, seals and fines		
Makes net receipts of "Rates, fines, etc."	<hr/>	\$238,986 04

Off and On.

Water has been shut off for non-payment of rates or per order on account of vacancy, and seals have been applied to fixtures by request of owners or occupants as follows : —

Supplies shut off in 1892	513
Supplies let on, shut off in 1892	401
Supplies let on, shut off in previous years	80
New supplies let on	439
Seal locks applied to fixtures in 1892	608
Seal locks removed, put on in 1892	259
Seal locks removed, put on in previous years	262

Comparative Statement.

	1891.		1892.	
Construction Acc't (Stony Brook).				
RECEIVED.				
From city of Cambridge (cash advanced for payment of sundry bills).....	\$4,040 13			
From bonds issued.....			\$75,000 00	
From premium on bonds.....			4,567 50	
From G. F. Haynes, Att'y for Nathaniel Sibley (one-half cost stenographic report).....		\$4,040 13	415 85	\$79,983 35
EXPENDED.				
Settlement for estates taken, etc.....	\$4,040 13		\$71,727 32	
Cash advanced by the city, 1890-1891....			4,401 33	
Balance of appropriation.....		\$4,040 13	3,854 70	\$79,983 35
Construction Acc't (Fresh Pond Land Purchase).				
RECEIVED.				
Balance of appropriation.....	\$14,141 33		\$11,594 55	
From bonds issued.....	20,000 00		125,000 00	
From premium on bonds.....	1,178 00		5,712 50	
EXPENDED.				
Purchase and settlement of sundry estates.....	\$23,724 78		\$107,702 31	
Balance of appropriation.....	11,594 55		34,604 74	
		\$35,319 33		\$142,307 05
Construction Acc't (General).				
RECEIVED.				
From bonds issued.....	\$35,000 00		\$70,000 00	
From premium on bonds.....	616 00		2,560 00	
From sale of buildings at Fresh Pond.....			7,200 00	
From excess of receipts from "Rates, fines, etc.".....			1,635 47	
Cash advanced by the city (expenditure in excess of bonds issued).....	3,273 54			
EXPENDED.				
Sundry bills.....		\$38,889 54		\$81,395 47
Maintenance Account.				
RECEIVED.				
Accrued interest on water bonds.....	\$228 89		\$925 01	
Sale of engine, boilers, hay, fruit, etc., at Fresh Pond.....	1,022 70		413 50	
Rent from Fresh Pond Ice Co.....	1,050 00			
From "Rates, fines, etc.".....	229,367 31		238,986 04	
EXPENDED.				
Care and repairs.....	\$69,274 42		\$46,733 13	
Interest on water debt.....	84,595 00		88,165 00	
Paid to Sinking Fund Commissioners..	62,002 50		62,177 50	
Salary of Treasurer of Sinking Fund..	200 00			
Rent of box in safety vault.....	20 00		20 00	
		\$216,091 92		\$197,095 63
Excess of receipts.....		\$15,576 98		\$43,228 92
Supply Account.				
Received.....	\$7,137 45		\$7,002 89	
Expended.....	6,810 80		7,300 86	
Excess of receipts.....		\$326 65		
Excess of expenditures.....				\$298 47
r891. Maintenance Account, excess of receipts				
Supply Account, excess of receipts				\$15,576 98
				326 65
Excess of total receipts over total expenditures				\$15,903 63
Transferred to Street Department appropriation by order of City Council				12,400 00
Balance due the Sinking Fund				\$3,503 63
r892. Maintenance Account, excess of receipts				
Supply Account, excess of expenditure			\$298 47	\$43,228 92
Transferred to Street Department appropriation by order of City Council			10,000 00	
Transferred to Construction Account by order of City Council			4,909 01	15,207 48
Balance due the Sinking Fund				\$28,021 44

The excess of receipts for 1892, as shown in the above comparative statement, amounting to \$28,021.44, has been carried to the Sinking Fund, as required by law.

Statement of the yearly revenue received from water rates since the purchase of the works by the city :—

From April 28, 1865, to Dec. 1, 1865	.	.	.	.	.	.	\$32,367 19
" Dec. 1, 1865, " 1, 1866	.	.	.	.	.	.	40,073 27
" " 1, 1866, " 1, 1867	.	.	.	.	.	.	52,733 62
" " 1, 1867, " 1, 1868	.	.	.	.	.	.	63,747 42
" " 1, 1868, " 1, 1869	.	.	.	.	.	.	76,149 30
" " 1, 1869, " 1, 1870	.	.	.	.	.	.	92,606 95
" " 1, 1870, " 1, 1871	.	.	.	.	.	.	111,782 65
" " 1, 1871, " 1, 1872	.	.	.	.	.	.	127,201 30
" " 1, 1872, " 1, 1873	.	.	.	.	.	.	146,117 32
" " 1, 1873, " 1, 1874	.	.	.	.	.	.	153,634 27
" " 1, 1874, " 1, 1875	.	.	.	.	.	.	138,880 37
" " 1, 1875, " 1, 1876	.	.	.	.	.	.	179,166 76
" " 1, 1876, " 1, 1877	.	.	.	.	.	.	154,843 59
" " 1, 1877, " 1, 1878	.	.	.	.	.	.	157,443 91
" " 1, 1878, " 1, 1879	.	.	.	.	.	.	164,681 90
" " 1, 1879, " 1, 1880	.	.	.	.	.	.	173,325 49
" " 1, 1880, " 1, 1881	.	.	.	.	.	.	170,062 73
" " 1, 1881, " 1, 1882	.	.	.	.	.	.	177,430 80
" " 1, 1882, " 1, 1883	.	.	.	.	.	.	179,361 89
" " 1, 1883, " 1, 1884	.	.	.	.	.	.	161,526 27
" " 1, 1884, " 1, 1885	.	.	.	.	.	.	185,544 36
" " 1, 1885, " 1, 1886	.	.	.	.	.	.	199,404 43
" " 1, 1886, " 1, 1887	.	.	.	.	.	.	204,748 64
" " 1, 1887, " 1, 1888	.	.	.	.	.	.	211,156 27
" " 1, 1888, " 1, 1889	.	.	.	.	.	.	221,124 70
" " 1, 1889, " 1, 1890	.	.	.	.	.	.	231,116 32
" " 1, 1890, " 1, 1891	.	.	.	.	.	.	227,054 53
" " 1, 1891, " 1, 1892	.	.	.	.	.	.	237,527 08

In addition to the manufactories, etc., supplied through meters, water is supplied to 17,956 families, 1,142 stables, with 3,283 horses and 366 cows, 296 shops, 662 offices and stores, by the following fixtures, viz. :—

20,526 faucets,	7 hopper closets,
5,637 wash-basins,	100 urinals,
5,013 washtubs,	28 yard hydrants,
4,915 bathtubs,	5 fountains,
578 slop closets,	24 tumbler washers,
12,052 pan closets,	1,676 hand hose,
6 motors.	

Also,

747 fire hydrants (besides 19 on private premises),
8 fire reservoirs,
19 drinking fountains in public squares,
53 street watering standpipes.

The above schedule of fixtures is exclusive of the school houses, engine houses, police stations, and other city buildings.

The usual house-to-house inspection of the service pipes and fixtures on the premises has been made with the customary satisfactory results.

Respectfully submitted,

WALTER H. HARDING,

Registrar.

REPORT OF THE COMMITTEE ON ACCOUNTS.

WE have examined the abstract of accounts as presented by the Water Registrar, covering the records of the past year. We have compared it with the statements submitted by the City Treasurer and Auditor, and we find it to be correct. Annexed is the financial statement presented to us by the Water Registrar, and verified by us:—

Amount of bills in hands of City Treasurer, Nov. 30, 1891 :

For water rates	\$691 28	
Supplies and repairs	2,196 41	
Off and on and seals	52 75	
Maintenance account	190 23	
Rent	8 00	
		\$3,138 67

Amount of bills delivered to the City Treasurer for collection during the year ending Nov. 30, 1892 :

Water rates	\$187,008 65	
Meter rates	55,337 30	
Supplies and repairs	6,632 62	
Off and on rent and seals	1,480 21	
Maintenance account	432 65	
		250,891 43
Total bills		\$254,030 10

There have been collected	\$247,887 35	
There have been abated	3,044 33	
Balance uncollected Nov. 30, 1892, water rates	1,029 38	
Balance uncollected Nov. 30, 1892, supplies and repairs	1,785 66	
Balance uncollected Nov. 30, 1892, off and on and seals	58 00	
Balance uncollected Nov. 30, 1892, maintenance account	209 38	
Balance uncollected Nov. 30, 1892, rent	16 00	
		254,030 10

Total collections on rates, fines, etc., and supplies and repairs	\$247,887 35
Less rates refunded	1,485 42
Net collections	<u>\$246,401 93</u>

JAS. M. W. HALL, } Committee
L. M. HANNUM, } on
Accounts.

CAMBRIDGE, Dec. 1, 1892.

OFFICE OF CITY TREASURER,
CAMBRIDGE, Dec. 1, 1892.

To the Cambridge Water Board:—

GENTLEMEN,— I give you herewith a record of the transactions between the Water office and the City Treasurer's office during the year ending Nov. 30, 1892:—

Gross collections for account of "Water Works, rates, fines, etc."	\$243,474 81
Abatement certificates received and paid on "Water rates"	3,003 35
Gross collections on account of "Water works, supply account"	7,043 37
Abatement certificates received and paid on "Supply account"	40 98
"Refund checks" have been presented and paid to the amount of	1,485 42
The uncollected bills in my hands Nov. 30, 1892, for account of "Maintenance" and "Water rates" is	1,312 76
The uncollected bills in my hands Nov. 30, 1892, for account of "Supplies, repairs, etc." is	1,785 66
The gross collections on account of "Water works, main- tenance" is	413 50

Very respectfully,

WM. W. DALLINGER,
City Treasurer.

OFFICE OF CITY AUDITOR, CITY HALL,
CAMBRIDGE, Dec. 1, 1892.

To the Cambridge Water Board:—

GENTLEMEN,—I herewith present a statement from my books for the year ending Nov. 30, 1892.

WATER WORKS (RATES, FINES, ETC.).

Amount of uncollected bills in City Treasurer's hands Dec. 1, 1891	\$752 03
Amount of bills placed in City Treasurer's hands for collection	243,826 16
Total	<u>\$244,578 19</u>
Amount collected by City Treasurer	243,474 81
Balance uncollected	<u>\$1,103 38</u>
Amount of abatements allowed by City Treasurer	\$3,003 35
Amount of refunds paid by City Treasurer	1,485 42

WATER WORKS (SUPPLIES).

Amount of uncollected bills in City Treasurer's hands Dec. 1, 1891	\$2,196 41
Amount of bills placed in City Treasurer's hands for collection	6,632 62
Total	<u>\$8,829 03</u>
Amount collected by City Treasurer	7,043 37
Balance uncollected	<u>\$1,785 66</u>
Amount of abatements allowed by City Treasurer	\$40 98

WATER WORKS (MAINTENANCE).

Amount of uncollected bills in City Treasurer's hands Dec. 1, 1891	\$190 23
Amount of bills placed in City Treasurer's hands for collection	432 65
Total	<u>\$622 88</u>
Amount collected by City Treasurer	413 50
Balance uncollected	<u>\$209 38</u>

Respectfully submitted,

HARRY T. UPHAM,
City Auditor.

ANNUAL STATEMENT OF THE WATER REGISTRAR TO THE COMMITTEE ON ACCOUNTS, DEC. 1, 1892.

Water rates unpaid, Nov. 30, 1891	\$691 28	
Off and on bills unpaid, Nov. 30, 1891	47 00	
Seal bills unpaid, Nov. 30, 1891	5 75	
Rent bills unpaid, Nov. 30, 1891	8 00	
Maintenance bills unpaid, Nov. 30, 1891	190 23	
	<hr/>	\$942 26

Bills placed in hands of the City Treasurer for collection, from Dec. 1, 1891, to Dec. 1, 1892:—

Water rates from annual ledgers	\$174,960 75	
Water rates from fractional ledgers	12,047 90	
Water rates from meter ledgers	55,337 30	
Off and on water	522 50	
Rent	851 96	
Fines	4 00	
Maintenance account	432 65	
Seals	101 75	
	<hr/>	244,258 81

Total bills on rates, fines, etc. \$245,201 07

Supply and repair bills unpaid Nov. 30, 1891 \$2,196 41

Supply and repair bills placed in hands of the City Treasurer for collection, from Dec. 1, 1891, to Dec. 1, 1892 6,632 62

Total bills \$8,829 03 \$254,030 10

There have been collected:—

Annual ledgers	\$173,762 95
Fractional ledgers	10,129 40
Meter ledgers	55,120 15
Off and on ledgers	506 50
Rent	843 96
Seals	104 50
Fines	4 00
Maintenance account	413 50

Total collections on "Rates, fines, etc." \$240,884 96

Collections on Supply and Repair account 7,002 39

Total collections \$247,887 35

Amounts carried forward \$247,887 35 \$254,030 10

<i>Amounts brought forward</i>	\$247,887 35	\$254,030 10
--	--------------	--------------

There have been abated:—

Water rates	\$3,003 35
Supplies and repairs	40 98

There remain uncollected:—

Water rates	1,029 38	
Supplies and repairs	1,785 66	
Off and on	55 00	
Seals	3 00	
Rent	16 00	
Maintenance account	209 38	
	<hr/>	
	6,142 75	
	<hr/>	<u>\$254,030 10</u>

Total bills for collection	\$254,030 10	
Less abated	\$3,044 33	
Less refunded	1,485 42	
Less unpaid	3,098 42	
	<hr/>	
	7,628 17	
	<hr/>	<u>\$246,401 93</u>
Net receipts		

Attest :

WALTER H. HARDING,

Registrar.

REPORT OF THE SUPERINTENDENT OF THE WATER WORKS.

CAMBRIDGE, Nov. 30, 1892.

To the President and Members of the Cambridge Water Board:—

GENTLEMEN, — The annual report of your Superintendent upon the condition of the works and the operations of the year is herein presented.

The total amount of water pumped was 1,961,862,760 gallons.

The total amount of coal consumed was 2,990,200 pounds.

The coal consumed per million gallons pumped was $1,524\frac{55}{100}$ pounds.

Water sold by meter and that used for watering streets, for fountains and flushing sewers, 534,962,625 gallons, leaving the amount for domestic use, 1,426,400,135 gallons.

Number of gallons daily for each inhabitant on whole amount pumped, 66.

Number of gallons daily for each inhabitant on amount for domestic use, private stables and hose, 48.

Fresh Pond and Surroundings.

The average height of water in the receiving basin has been 14.95.

It reached its highest point May 23, viz.: 16.64, and its lowest August 3, viz.: 12.29.

The rainfall as observed at the engine house was $44\frac{85}{100}$ inches.

Water was drawn from Stony Brook as follows: July 10 the gate was closed on this source, height of water, 81.10; August 16 it was opened, height of water, 80.65; October 10 it was closed, height of water, 70.04; October 31 it was again opened, height of water, 71.14.

It reached its lowest point November 10, viz.: 69.56 or $11\frac{44}{100}$ feet below the crest.

The height at this date is 79.74 or $2\frac{26}{100}$ feet below the crest.

The rainfall as observed at this basin was $37\frac{9}{100}$ inches.

Receiving Basin and its Surroundings.

During the winter when the ground was frozen, the trees and brush were cut in the Tudor, Black and Gay swamps, preparatory to grading the same.

Dr. Keene having given the land to widen Fresh Pond Lane to forty feet from Huron Street to the Park Bridge, also a strip of land forty feet in width parallel with the Fitchburg Railroad track, to open a street from the bridge to Larch Street, a distance of about two hundred and twenty-five feet, these improvements were commenced April 1, and completed the latter part of same month.

Larch Street, also, was graded from the new extension to the Fitchburg depot by this department.

A new and substantial fence was built by the Fitchburg Railroad Company on its line from the depot to the Park Bridge.

A fence was built by this department on both sides of Fresh Pond Lane from Huron Street to the Park Bridge, and on the east side of the new extension.

The opening of Larch Street from the depot to the Park Bridge was a much needed improvement, as it gives access to the Park drives without opening gates and without danger from crossing the track at grade.

The rip-rapping around the basin is in good condition and has needed but slight repair.

The roadway has been kept clean and properly graded.

The work of filling the swamp and grading the banks on the west side of the reservoir was continued until January 5, when it ceased for the winter. It was commenced again the latter part of April and continued until July 3.

A large amount of grading and loaming was done, nearly completing that portion of the Park to the Lilly Pond.

Early in the season an arrangement was made with the Fitchburg Railroad Company to build about one and one quarter miles of track from where the Tudor Ice track crosses Concord Avenue to and along the north shore, Black's Nook to the Gay bank at the Belmont line. An additional arrangement was made with them to furnish a locomotive, engineer, firemen, conductor, brakeman and twenty dump cars for the purpose of filling and grading the Tudor swamp, bordering Concord Avenue. June 6 this work was commenced and continued uninterruptedly until its completion; Nov-

ember 23 sixty-eight thousand cubic yards of filling had been moved from the Gay bank for that purpose.

A contract has been let to parties to cover this new graded territory with about nine thousand cubic yards of loam; the work has been commenced and is to be completed by May 1, 1893.

The filling of this territory has removed all danger from the overflow of the meadows and obliterated a very unsightly place.

The filling of Black's Nook is now progressing very favorably, and it is expected that it will be possible to not be obliged to refer to this notorious place again, as being in existence.

The ice houses, formerly owned by the Boston Ice Company, have been sold and torn down; and the parties purchasing not having removed the bricks, after having the time specified for their removal extended twice, they were advertised, sold at public sale, and came into the possession of this department. They now are being dumped into the bay between the former locations of the ice houses to make a foundation for the purpose of filling and rip-rapping the only portion of the basin not completed.

All of the ice houses, the Black house, Lyons stable, Gay house and barn, two Smith houses, and the old Fresh Pond Hotel have been removed.

The street department having widened and graded Grove and Adams Streets, from Cushing Street to Concord Avenue, a new fence was built to grade and line the entire distance excepting in front of the White estate, where the old fence was moved back as it was in good condition.

A fence has been built on Concord Avenue, from Adams Street to the Park drive, and from the Fitchburg Railroad track to the fence built last year.

Total length of fence built and moved back was six thousand five hundred and fifty-four feet, divided as follows: Nine hundred and sixteen feet of new fence in Adams Street, twenty-three hundred and twenty-six feet of new fence in Grove Street, thirteen hundred and twenty-seven feet of new fence in Concord Avenue, eight hundred and twenty-five feet of new fence in Fresh Pond Lane, two hundred and twenty-five feet of new fence in Larch Street, and nine hundred and thirty-five feet of old fence moved back in Adams Street.

All of the grass on the east and south sides of the Park was sold standing; the remainder was cut and stored in the stables on Concord Avenue and at the pipe yard.

The stable and tool-house on Concord Avenue have been painted and put in good condition.

The small ell connected with the brick house needs shingling.

The driven wells in the stable and house were re-driven, as they were clogged and a source of constant annoyance.

Pumping Works.

A new cast-iron roof has been put on the top of the boiler house chimney; a lightning rod and ladder have been attached.

The re-covering of the engine house roof was postponed until the coming spring.

The stone and brick work on the engine house and boiler house has been thoroughly pointed.

The new high service pump is completed, and is now in commission; it will soon commence running day and night, giving a constant supply to parties on the high elevations.

The old high service pump will be repaired as soon as the new one is in thorough running order.

The walks have been kept graded, and the grass cut on the engine house lot and Tudor parks.

Reservoir.

No repairs have been necessary.

The grass has been cut, and the walks received the usual care.

The standpipe will need painting during the coming season.

Stony Brook.

Daily average number of gallons by the month flowing over the waste way, was as follows:—

December, 1891 .	9,678,827 gals.	June, 1892 .	6,534,295 gals.
January, 1892 .	30,655,620 "	July, " .	3,265,814 "
February, " .	16,740,105 "	August, " .	No overflow.
March, " .	35,209,500 "	September, " .	No overflow.
April, " .	12,762,063 "	October, " .	No overflow.
May, " .	17,030,789 "	November, " .	No overflow.

Total amount wasted, 3,688,997,488 gallons.

A great deal of trouble was experienced this fall on account of leaves collecting on the screens. Some arrangement should be made outside the gate-house to prevent them from getting into the screen

room. At present there is no way to work outside the gate-house when leaves are falling, excepting from a boat which is almost useless.

The dwelling house roof on the south side will require shingling this season.

There should be an addition made to the barn, as it is very small and inconvenient. This could be done at slight expense, as the keeper, Mr. Baxter, could do nearly all the work.

Stony Brook Pipe Line.

There have been no leaks on this line during the year.

All of the gates and blow-offs have been inspected and their locations marked.

Pipe Yard.

A two-story building has been erected between the dwelling-house and the carriage house, where the long, low shed formerly stood. Two rooms on the lower, and two on the upper floors were furnished and connected to the house, supplying a much needed convenience.

The house and stable will need painting this season.

Pipe Bridges.

While the First Street Bridge was being built across Broad Canal, a 12-inch siphon was laid, and the main pipe was extended and connected with the 8-inch main on West Boston Bridge; it also was extended north to Binney Street. This main should be extended up Binney Street to Third Street, and as soon as the streets are made to grade and line through First Street, to connect with the main pipe, now laid.

The North Avenue Bridge has been put in thorough repair. This bridge is owned jointly with the Cambridge Gas Company, and this time the repairs were made under the direction of Mr. Allyn, the superintendent.

The wooden bridge at Mt. Auburn Station being very much decayed, was removed and an iron one built in its place.

As the city was to build a new and iron bridge in Walden Street, arrangements were made in its construction for supports for a 12-inch main. When the flooring of the bridge was in

position this line of pipe was laid and can be connected any time when it is necessary to increase the size of the pipe in this street.

The covering of the Brookline Street Bridge has been temporarily repaired. The west side of this bridge should have new studding and then covered with plank, as drift ice often piles against it.

Main Pipe.

16,784 feet of various sizes of main pipes have been laid for new extensions, and 13,628 feet for renewals; 16,013 feet of various sizes have been laid for supplies, making $8\frac{79}{100}$ miles of trenching and back filling.

The engineer's report, statements in detail of main pipe and supplies laid, of gates and hydrants set, locations of fountains, stand-pipes, check valves, and meters, with inventory of stock and tools, accompany this report; all of which are respectfully submitted.

A much needed want has been supplied, by the addition of a large map of the city, drawn at a scale 200 feet to an inch, with lines and sizes of pipe, the same being hung in the board room. Opportunity for quick reference and minute description is hereby afforded.

HIRAM NEVONS,

Superintendent.

Main Pipe.

Main pipes have been laid in the following streets: 200 ft. of 2 in. in Bacon Court; 73 ft. of 6 in. in Banks St.; $155\frac{1}{2}$ ft. of 6 in. in Beech St.; 192 ft. of 6 in. in Belmont St.; 60 ft. of 8 in. in Bent St.; 3 ft. of $1\frac{1}{2}$ in., and 240 ft. of 4 in., in Berkeley St. Place; 253 ft. of 6 in. in Berkeley St. (renewal); 149 ft. of 4 in. in Broadway (high service); 77 ft. of 6 in. in Buckingham St. (renewal); 38 ft. of 6 in. in Cambridge St.; 3 ft. of $1\frac{1}{2}$ in., and $497\frac{1}{2}$ ft. of 6 in., in Cameron St.; 92 ft. of 2 in. in Clark St. Place; $43\frac{1}{2}$ ft. of 4 in. in Clary St.; 3 ft. of $1\frac{1}{2}$ in., and $218\frac{1}{2}$ ft. of 4 in., in Conlan Court; $234\frac{1}{2}$ ft. of 6 in. in Crescent Ave.; $366\frac{1}{2}$ ft. of 4 in. in Dyke St. (renewal); 20 ft. of 4 in. in Eighth St.; 134 ft. of 12 in. (siphon), and 1,049 ft. of 12 in. in First St.; 53 ft. of 4 in. in Fiske Ave.; 1,060 ft. of 6 in. in Follen St. (renewal); 36 ft. of 4 in. in Garden Court; 3 ft. of $1\frac{1}{2}$ in., and 170 ft. of 4 in. in Hall Place; 210 ft. of 4 in. in Harvard Place (renewal); 3 ft. of $1\frac{1}{2}$ in., and $548\frac{1}{2}$ ft. of 6 in., in

Haskell St.; 3 ft. of 1½ in., and 203 ft. of 4 in., in Hastings Ave.; 245½ ft. of 6 in. in Hovey Nursery St.; 322 ft. of 6 in. in Hubbard Park; 3 ft. of 4 in. in Hurlbut St.; 324 ft. of 6 in. in Huron St.; 972 ft. of 6 in. in Inman St. (renewal); 369 ft. of 6 in. in Kildare St.; 37 ft. of 1¼ in. in Lake View Ave.; 44½ ft. of 6 in. in Lambert Ave.; 733 ft. of 6 in. in Leonard Ave.; 531 ft. of 6 in. in Lexington Ave., Ward I. (high service); 3 ft. of 1½ in. and 157½ ft. of 6 in. in Lexington Ave., Ward V.; 291½ ft. of 6 in. in Line St.; 700 ft. of 6 in. in Magnolia Ave.; 74 ft. of 6 in., and 3,123 ft. of 12 in., in Main St.; 230½ ft. of 6 in. in Martin St.; 3 ft. of 1½ in., and 334 ft. of 6 in., in Mason Ave.; 51 ft. of 4 in. in Mercer Circle; 634 ft. of 6 in. in Mill St. (renewal); 294 ft. of 6 in. in Myrtle Ave.; 345 ft. of 6 in. in Newman St.; 124½ ft. of 2 in. in Niles Place; 1,006 ft. of 8 in., and 24 ft. of 6 in., in Ninth St.; 1,254 ft. of 10 in. (renewal), and 24 ft. of 6 in., in North Ave.; 3,061 ft. of 8 in. (renewal), and 330 ft. of 6 in., in Pearl St.; 26 ft. of 6 in. in Pemberton St.; 100 ft. of 4 in. in Pemberton Court; 679 ft. of 6 in. in Plympton St. (renewal); 1,103 ft. of 6 in. in Prospect St.; 242½ ft. of 6 in. in Raymond St.; 356½ ft. of 6 in. in Sparks St.; 1,185 ft. of 6 in. in Spring St.; 202 ft. of 4 in. in Spruce Court; 1,721 ft. of 8 in. (renewal), and 152 ft. of 6 in., in Thorndike St.; 745½ ft. of 6 in. in Union St. (renewal); 307 ft. of 6 in. in Vine St.; 84 ft. of 12 in. in Walden St. (pipe bridge); 874½ ft. of 6 in. in Walker St.; 122½ ft. of 2 in. in Wallace St. Court; 3 ft. of 1½ in., and 425½ ft. of 4 in., in Wells Place.

Mercer Circle has been connected to the low service; formerly it was supplied from the high service.

For the accommodation of the sewer department, the 6 in. main in Tannery Street was carried over the culvert.

New Supplies.

Four hundred and twenty-two new supplies have been laid, making the total number laid to date, 11,380.

Sixty-eight supplies have been renewed; of these six were enlarged and two renewed with lead pipe.

Eight supplies have been furnished with sidewalk shut-offs and seven supplies have been extended.

Supplies in the following streets have been connected to the new mains: Austin, Berkeley, Broadway, Buckingham, Craigie, Dyke, Follen, Inman, Mill, Pearl, Plympton, Prospect, Spring, Union, Thorndike and Vine Streets; and in Third Street the supplies have been connected to the 12 in. main, the 4 in. having been abandoned.

The supplies in Essex Street have been carried over the sewer.

The supplies at corner of Eighth and Thorndike Streets have been carried around the cesspool.

Leakage.

Six hundred and eighty-six leaks have been stopped; namely, four on 4 in. mains, four on 6 in. mains, two on 8 in. mains, one on 10 in. main, three on 12 in. mains, one on 20 in. main, one on 24 inch main, fifty-five on supplies in streets, and six hundred and fifteen on premises; of these six hundred and eight were reported by inspectors found while canvassing, and were repaired by owner or occupant.

A general inspection of pipes and fixtures has been made.

Drinking Fountains.

Three new drinking fountains have been set this year: one sidewalk fountain in Lechmere Square, one drinking fountain in Davis Square near Porter's Station, and one drinking fountain at the junction of Webster Avenue and Winsor Street, which was presented to the city by Mr. E. H. Norton.

There are nineteen in use.

Standpipes for Street Watering.

No addition to the number of street-watering standpipes has been made by this department.

One on Craigie Street, at the corner of Sparks Street, has been disconnected from the high service and connected to the low service.

Gates.

All the gates have been inspected and are in good condition.

In addition to the gates reported with the main pipes, the following gates have been set in places of old ones removed: At the corner of Webster Avenue and Clark Street, one 3 in. was removed and one 3 in. set; in Berkeley Street, one 4 in. was removed and one 6 in. set; in Buckingham Street, one 3 in. was removed and one 6 in. set.

Two 6 in. gates have been set for the West End Street Railway Company in North Street.

The gate at corner of Craigie and Sparks Streets has been filled in, a new one having been set very near this location.

Boxes.

Nine hydrant, ten iron, and eleven wooden boxes, making a total of thirty, have been set in place of worthless ones removed.

Check Valves.

One 6 in. check valve has been set in Lexington Avenue, Ward I. No other addition has been made. The 4 in. check valve at corner of Parker and Buckingham Streets has been re-located in Buckingham Street near Parker Street.

High Service.

Five hundred and thirty-one feet of 6 in. pipe in Lexington Avenue, Ward I., and one hundred and forty-nine feet of 4 in. in Broadway, are the only extensions of high service mains that have been laid this year.

Meters.

The number of meters in use at this date, November 30, is two hundred and eighty-seven.

The location of the 6 in. Rotary meter at the Prison Point Street yard of the Boston & Maine Railroad has been changed in order to facilitate the removing and testing of this important meter.

Hydrants.

Fifty-four Chapman and one Perkins hydrant have been added during the year; the total number in use is 747.

Old flush hydrants at Fourth and Thorndike Streets and at Spruce and Haskell Streets have been removed; and at the corner of Craigie and Sparks Streets the old flush hydrant has been filled in, it being considered too expensive work to cut it out in its worthless condition.

Old flush hydrants have been removed, and new Chapman posts set in their places in the following locations: Hubbard Ave., corner of Raymond St.; Hubbard Ave., near Walden St.; Inman St., opposite Summer St.; Highland Ave.; Pearl St., corner of Auburn St.; Cottage St., corner of Pearl St.; Putnam Ave., corner of Pearl St.; Banks St., corner of Flagg St.; Banks St., corner of Sand St.; Thorndike St., corner of Fifth St.; Washington and Portland Sts.; Spring and Third Sts.; Plympton and Mill Sts.; and Charles and Fifth Streets (on account of a leak).

One Chapman post was removed and a Coffin post hydrant set in its place at corner of Vine and Third Streets.

The hydrant at corner of Fifth and Bent Streets has been located at corner of Bent and Fifth Streets for the accommodation of the George F. Blake Mfg. Co.

The hydrant at corner of Lexington Avenue and Huron Street has been moved on account of the change in line of Huron Street.

The hydrant at corner of North Avenue and Haskell Street has been set on Haskell Street, corner of North Avenue.

The Chapman hydrant at Albany and Front Streets has been re-set at same location.

The following hydrants are located on private premises :

LOCATION.	Flush.	Post.
American Rubber Company.....		1
Boston & Maine Railroad Company	4	3
Boston Woven Hose Company		1
Houghton & Company	2	2
Maverick Oil Works.....		1
Mt. Auburn Corporation.....	1	
North & Company		1
Page, George G., & Company.....		1
Street Department, Brewer Street		1
Street Department, Tremont Street.....		1
West End Street Railway Company.....		1

List of Meters in use Nov. 30, 1892.

METER.	LOCATION.	SIZE INCH.	KIND.
Alghieri, Simon.....	Main St.....	$\frac{3}{4}$	Worthington.
American Net and Twine Co.....	Third St.....	2	"
American Rubber Co.....	Potter St.....	4	Union.
Andrews, D. H.....	Ninth St.....	$1\frac{1}{2}$	"
Andrews, Dr. R. R.....	Potter St.....	$\frac{5}{8}$	Crown.
Avon Home.....	Mt. Auburn St.....	$1\frac{1}{2}$	Worthington.
Barbour, Stockwell & Co.....	Broadway.....	2	"
" " " ".....	Davis St.....	2	Hersey.
Bay State Brick Co.....	Spruce St.....	$1\frac{1}{2}$	Union.
Bay State Distilling Co.....	Cambridge St.....	2	Worthington.
Bell, J. S.....	Hampshire St.....	$\frac{5}{8}$	"
Bird, H. M.....	Broadway.....	$\frac{5}{8}$	Union.
Blake, George F. Mfg. Co.....	Pinney St.....	2	"
" " " ".....	Third St.....	2	Crown.
" " " ".....	Third St.....	$\frac{3}{4}$	Worthington.
" " " ".....	Third St.....	2	Hersey.
Blake, Irvyng W.....	Church St.....	1	Worthington.
" " " ".....	Church St.....	1	Crown.
B. & M. R. R., Car house.....	Prison Point St.....	2	Worthington.
" " Filling locomotives.....	Prison Point St.....	6	Union.
" " Hoisting engines.....	Prison Point St.....	1	Crown.
" " Paint house.....	Prison Point St.....	1	Worthington.
" " Repair shops.....	Bridge St.....	2	"
" " Round house.....	Prison Point St.....	2	"
" " " ".....	Prison Point St.....	3	Frost.
" " " " new.....	Prison Point St.....	3	Union.
Boston Curling Club.....	Lexington Ave.....	1	Worthington.
Boston Ice Co.....	Prison Point St.....	$1\frac{1}{2}$	Union.
Boston Stamping Co.....	Third St.....	$1\frac{1}{2}$	"
Boston Woven Hose Co.....	Hampshire St.....	4	Worthington.
Bradgon & Cooper.....	Frank St.....	$\frac{5}{8}$	"
Brewer, Thomas.....	Brattle St.....	$\frac{3}{4}$	"
Brown, L. S.....	Hampshire St.....	$1\frac{1}{2}$	Crown.
Bullock, O. S.....	Broadway.....	$\frac{3}{4}$	Worthington.
Burton, A. & E.....	Harvard St.....	$\frac{3}{4}$	"
Buxton, George H. & Co. (stable).....	Inman Sq.....	$\frac{3}{4}$	Crown.
Cambridge Baking Co.....	Green St.....	$1\frac{1}{2}$	Worthington.
Cambridge Brass Co.....	Cedar St.....	$\frac{3}{4}$	Union.
Cambridge Electric Light Co.....	Albro St.....	4	Worthington.
Cambridge Gas Light Co.....	Ash St.....	$\frac{3}{4}$	"
" " " ".....	Third St.....	1	"
" " " ".....	Third St.....	2	"
Cambridge Hospital.....	Mt. Auburn St.....	$1\frac{1}{2}$	Crown.
Cambridge Y. M. C. Association.....	Main St.....	$1\frac{1}{2}$	Union.
Cambridgeport Diary Co.....	Blackstone St.....	$1\frac{1}{2}$	"
Campbell, Wm. & Co.....	Potter St.....	2	Worthington.
Carr Bros.....	Lopez St.....	1	"
Catholic Y. M. C. Association.....	Prospect St.....	$\frac{5}{8}$	"
City of Cambridge (Fountain).....	Brattle and Craigie Sts.....	$\frac{5}{8}$	Metropolitan.
" " " ".....	Brattle Sq.....	$\frac{5}{8}$	Thomson.
" " " ".....	Central Sq.....	$\frac{5}{8}$	Duplex.
" " " ".....	Lechmere Sq.....	$\frac{5}{8}$	Crown.
" " " ".....	North Ave.....	$\frac{5}{8}$	Terry.
Chadwick Lead Works.....	North St.....	1	Worthington.
Champlin, E. R.....	Main St.....	1	Crown.
Chelmsford Foundry Co.....	Bridge St.....	$\frac{3}{4}$	Worthington.
Clark, B. P. & Co.....	Main St.....	$1\frac{1}{2}$	Hersey.
Clark, Miss M. E. (gymnasium).....	Beech St.....	$\frac{3}{4}$	Crown.
Clarke Coffee Co.....	Reed St.....	$1\frac{1}{2}$	Worthington.
Close, George.....	Broadway.....	1	"
Cochrane Chemical Co.....	Potter St.....	2	"
Cofran, N. M.....	Concord Ave.....	$1\frac{1}{2}$	Thomson.
Coleman Bros.....	Broadway.....	1	Worthington.
Coolidge & Caswell.....	Franklin St.....	2	Hersey.
Coolidge, J. G. (barn).....	Coolidge Ave.....	2	Worthington.
" " (greenhouse).....	Coolidge Ave.....	1	"

List of Meters — continued.

METER.	LOCATION.	SIZE INCH.	KIND.
Cushman Bros. & Co.	Blanche St.	¾	Worthington.
Cushing Process Co.	Clark St.	¾	Crown.
Dailey, C. W.	Cambridge St.	1	Worthington.
Damon Safe and Iron Works.	Main St.	2	Hersey.
" " " "	Main St.	1	Worthington.
Daniels, Badger & Co.	Albany St.	2	Crown.
Davenport, A. H.	Cambridge St.	2	Worthington.
" " " "	Otis St.	¾	Crown.
Davis, Curtis & Co.	Harvard St.	1½	Worthington.
" " " "	Harvard St.	6	Union.
" " " "	Broadway	2	Worthington.
Davis, J. C. & Co.	Broadway	4	"
" " " "	Magazine St.	1	"
Dee, Thomas W.	Fresh Pond Lane	2	Hersey.
Derby, H.	Main St.	1	Union.
DeRosay, D. Warren	Dublin St.	¾	Worthington.
Dolan, John.	Deatur St.	¾	Crown.
Dover Stamping Co.	Pleasant St.	6	Union.
Dow, J. C. & Co.	Portland St.	2	Crown.
" " " "	Portland St.	1	Worthington.
Downing, Theo.	Eustis Ct.	1	"
Doyle, W. E.	Cambridge St.	1½	Union.
Dow, E. A.	Deacon St.	1	Worthington.
East Cambridge Club (stable).	First St.	1	"
Ellis, S. R. (stable).	Oxford St.	¾	"
Episcopal Theological Seminary	Brattle St.	1½	"
Fabyan, J. E.	Ellery St.	¾	"
Fairbanks, Mrs. M. J. (stable).	Norfolk St.	1	"
Farnsworth, T. H.	North Ave.	1	"
Flatley, Rev. J.	Spruce St.	1	"
Fletcher, C. R.	Osborn St.	¾	Crown.
Flintze, E.	Otis St.	1½	Thomson.
Furfey, James	Brookline St.	1	Worthington.
Gillon, Mrs.	Farwell Pl.	1	"
Goepper Bros.	Ninth St.	1½	"
Gwynne & Co.	Spring St.	2	"
Harvard College, Annex	Brattle St.	1	Crown.
" " " "	Mason St.	¾	Union.
" " " "	Garden St.	2	Frost.
" " " "	DeWolf St.	¾	Thomson.
" " " "	Boylston St.	2	Hersey.
" " " "	Garden St.	1	Crown.
" " " "	College grounds.	2	"
" " " "	College grounds.	2	Hersey.
" " " "	College grounds.	2	Worthington.
" " " "	Oxford St.	1	"
" " " "	Kirkland St.	2	Union.
" " " "	Peabody St.	2	"
" " " "	North Ave.	2	Hersey.
" " " "	College grounds.	¾	Worthington.
" " " "	Harvard St.	2	"
" " " "	North Ave.	2	Union.
" " " "	College grounds.	1½	Worthington.
" " " "	Holmes Field.	1½	Crown.
" " " "	Everett St.	¾	Worthington.
" " " "	Kirkland St.	¾	"
" " " "	Holmes Field.	1	"
" " " "	Divinity Ave.	1	"
" " " "	Divinity Ave.	1½	"
" " " "	Cambridge St.	2	"
" " " "	College grounds.	¾	"
" " " "	College grounds.	1½	Hersey.
" " " "	College grounds.	1½	Worthington.
" " " "	College grounds.	1½	"
" " " "	Everett St.	1½	Union.
" " " "	Oxford St.	¾	"
" " " "	College grounds.	2	"
Harvard Piano Co.	Main St.	¾	"
Hale, Aaron.	Elm St.	¾	Thomson.
Hannum, L. M.	Green St.	1	Worthington.
Hawkins Machine Co.	First St.	1	"
Hazen, D. M.	Elm St.	1	"
Hayward Confectionery Co.	Main St.	1	"
Hews, A. H. & Co.	Crescent Ave.	1	"

List of Meters — *continued.*

METER.	LOCATION.	SIZE. INCH.	KIND.
Hews, A. H. & Co.	Walden St.	1½	Worthington.
Hersey, Ira G.	Broadway	1½	"
Hilton, J. M.	Harvard St.	1½	Hersey.
Holt & Bugbee.	East St.	1½	Worthington.
Holton, F. H. & Co.	Harvard St.	2	"
Horgan, J. H.	Main St.	¾	Union.
Houghton, H. O. & Co.	Blackstone St.	¾	Crown.
" " " "	Blackstone St.	2	Worthington.
Howe, David.	Distillhouse St.	2	Crown.
Ivers & Pond, No. 1.	Main St.	2	Worthington.
" " " " No. 2.	Albany St.	2	Crown.
" " " " Engine room.	Albany St.	2	Union.
Irving & Casson	Otis St.	1	Worthington.
Jones, C. L.	Pearl St.	¾	Ball & Fitts.
Keeler & Co.	Thornlike St.	2	Union.
Kemlo, D. E.	Third St.	1	Worthington.
Kemp, L. & Sons.	Davis St.	2	"
Kendall & Sons, Boiler shop.	Main St.	1	"
" " " " Engine room.	Main St.	¾	"
" " " " " "	Main St.	2	Union.
Kennedy, Frank A. (pump).	Main St.	¾	Thomson.
Kerr, Ropes & Crowell	Bridge St.	2	Worthington.
Lake & Moynahan.	Main St.	¾	Crown.
Lamb & Ritchie	Albany St.	1	"
Laminar Fibre Co.	Tannery St.	2	Worthington.
Linehan, Charles	Bridge St.	1	Crown.
" " " " " "	Bridge St.	¾	Union.
Little, Brown & Co.	Blackstone St.	¾	Thomson.
Mason & Hamlin Organ and Piano Co.	Broadway	2	Hersey.
Maverick Oil Works.	Sixth St.	2	"
McDonald, Patrick	Charles St.	¾	Frost.
McLeod, Wm. G.	Elm St.	1	Worthington.
Middlesex County House of Correct'n	Second St.	2	"
" " " " " "	Spring St.	4	Union.
" " " " " " Court House	Otis St.	1	Crown.
" " " " " " " "	Thornlike St.	1	Worthington.
" " " " " " " " Registry of Deeds.	Otis St.	1½	"
Middlesex Bleachery & Dye Works.	Sacramento St.	1	"
Milan, Alex.	Brattle St.	¾	Crown.
Miller & Shaw	Broadway	1	Worthington.
Miller & Sons.	Gore St.	¾	Frost.
Moring, Est. of A. L.	Main St.	1	Hersey.
Moss & Whyte	Auburn St.	4	Crown.
Moulton, C. W. H.	Gore St.	¾	Worthington.
Mt. Auburn Corporation Cemetery	Mt. Auburn St.	¾	Desper.
" " " " " " Greenhouse.	Brattle St.	2	Hersey.
" " " " " " " "	Coolidge Ave.	4	Worthington.
Murdock, W. H.	Griggs St.	¾	Ball & Fitts.
McNamee, J. H. H.	Main St.	2	Hersey.
McNamee, John & Sons	Mt. Auburn St.	¾	Worthington.
National Linseed Oil Co.	Fifth St.	1	"
New England Dredging Co.	Front St.	4	Crown.
New England Stone Co.	Main St.	¾	Worthington.
New York Biscuit Co.	Franklin St.	1½	Union.
" " " " " "	Franklin St.	2	"
" " " " " "	Green St.	2	"
" " " " " "	Green St.	3	Worthington.
Norcross Bros.	Brookline St.	1½	Union.
Norton, George W.	Distillhouse St.	1	Worthington.
O'Brien, John F.	Coolidge Ave.	¾	"
Oliver, G. R.	Main St.	¾	Crown.
Orr, Rev. Wm.	Arrow St.	1	Worthington.
Page, G. G. Box Co.	Hampshire St.	2	"
" " " " " " " "	Hampshire St.	4	Union.
Page, Carlos	Broadway	1½	Worthington.
Paige & Co.	Bridge St.	¾	Crown.
Parry Bros.	Raymond St.	¾	Worthington.
Porcellian Club	Harvard St.	1	Hersey.
Phillips Bros & Co.	Main St.	¾	Worthington.
Place, Charles	Norfolk St.	1½	"
Plymouth Rock Pants Co.	Binney St.	1	"
Purell, H.	Main St.	¾	"
Quinn, John	Otis St.	1½	Union.

List of Meters — continued.

METER.	LOCATION.	SIZE INCH.	KIND.
Rawson & Morrison	Main St.	¾	Union.
Readon, John, Sons.	Waverly St.	4	Worthington.
Revere Sugar Refinery	Water St.	3	Union.
"	Water St.	3	"
Reversible Collar Co.	Mt. Auburn St.	1½	Frost.
Rideout, M. E.	State St.	1	Worthington.
Riverside Boiler Works	Harvard St.	1	"
Roberts Iron Works Co.	Main St.	1½	Crown.
Roberts, O. P.	Brattle St.	1	Worthington.
Rogers, heirs of George M	Washington St.	3	"
Rutherford, R. J.	First St.	1	Crown.
Sands, M. W.	Dublin St.	5/8	Union.
"	Dublin St.	3/4	Worthington.
Salvation Army.	Prospect St.	3/4	"
Shaw, A. B. & E. L.	Otis St.	3/4	"
Shales, G. W.	Gore St.	¾	Union.
Shorey, Geo. L.	Kinnaird St.	4	Worthington.
Smart, D. C.	Main St.	2	Crown.
Somers, Adolph.	First St.	2	Union.
Spaulding Cable Works	Main St.	5/8	Worthington.
Speare's, S. Alden Sons & Co.	Rogers St.	1½	"
" " (laundry)	Binney St.	3	"
Squire, John P. & Co.	Gore St.	1	"
" " " "	Gore St.	2	"
" " " "	Gore St.	4	Union.
" " " "	Gore St.	6	Gem.
St. Mary's Catholic Church.	Norfolk St.	2	Worthington.
St. Peter's Catholic Church.	Concord Ave.	2	Union.
St. Paul's Catholic Church.	Mt. Auburn St.	2	"
Storr, D. C. Furniture Co.	Thorndike St.	¾	Worthington.
" " " "	First St.	¾	Metropolitan.
Sullivan, Mrs.	Farwell Pl.	1	Worthington.
Teele, Frank H.	Lincoln Ct.	2	"
Thayer, Henry & Co.	Broadway	¾	"
Tower, S. & Son.	Broadway	2	"
Tracy, M. F.	Boylston St.	¾	"
Underhill & Anderson.	First St.	1½	"
" " " "	First St.	2	Union.
Union Glass Co.	Webster Ave.	¾	Worthington.
" " " "	Webster Ave.	1	"
Vannier, Jos.	Columbia St.	1	"
Warren, J. H., Felton Hall	Cambridge St.	1	"
West End St. Ry. Co., Carhouse.	Cambridge St.	1	Balance Valve.
" " new " "	Dunster St.	¾	Worthington.
" " El. " "	Murray St.	1	"
" " El. power house.	Murray St.	1	"
" " " "	North St.	2	"
" " " "	North St.	3	"
" " Office " "	Harvard Sq.	¾	Crown.
" " Paint Shop	Dunster St.	1	Worthington.
" " Repair shop	Dunster St.	1	"
" " Stable.	Baldwin St.	1	"
" " " "	Brookline St.	1	"
" " " "	Cambridge St.	1	"
" " " "	Cambridge St.	1	"
" " " "	Dunster St.	1	"
" " " "	Dunster St.	¾	Hersey.
" " " "	Main St.	2	Worthington.
" " " "	Mt. Auburn St.	2	Crown.
" " " "	North Ave.	2	Worthington.
" " " "	Murray St.	1½	"
" " " "	River St.	1	"
" " Washing cars.	Murray St.	1	Ball & Flitts.
" " Waiting room	Main St.	¾	Worthington.
" " " "	Bridge St.	¾	Union.
" " " "	Bridge St.	¾	"
Weitzel, Rob't.	Eighth St.	1	Worthington.
" " " "	Thorndike St.	¾	Crown.
Whitney, H. W.	Main St.	¾	"
Wight & Scorgie.	Mt. Auburn St.	¾	"
Wilcox, David.	Davis St.	2	Frost.
Wilkins, W. & Co.	Earl St.	5/8	Terry.
Williams, H. A. Mfg. Co.	Otis St.	1	Worthington.
Willson's, John, Sons.	Brattle Sq.	1½	Hersey.
Woods, J. M. & Co.	Bridge St.	1½	Worthington.
Zereza, J. P.	State St.	5/8	"

List of Drinking Fountains Nov. 30, 1892.

Brattle Street, junction of Craigie Street.
Brattle Street, east side, at Brewer's Block.
Bridge Street, junction of Cambridge Street.
Broadway, corner of Norfolk Street.
Central Square, east side.
Central Square, west side.
Davis Square, North Avenue.
Garden Street, at Washington Elm.
Hampshire Street, junction of Broadway.
Harvard Square, at the flagstaff.
Inman Square, east side.
Lechmere Square.
Main Street, junction of Broadway.
Main Street, junction of Mt. Auburn Street.
Mt. Auburn Street, corner of Coolidge Avenue.
North Avenue, at Igo's.
North Avenue, corner of Walden Street.
Putnam Avenue, corner of Brookline Street.
Webster Avenue and Windsor Streets.

List of Standpipes for Street Watering Nov. 30, 1892.

Bow Street, at angle.
Boylston Street.
Brattle Street, near University Press.
Brattle Street, near Fayerweather Street.
Brattle Street, near Fresh Pond Lane.
Brattle Street, corner of Sparks Street.
Bridge Street, junction of Cambridge Street.
Broadway, junction of Hampshire Street.
Broadway, corner of Sixth Street.
Broadway, near Third Street.
Broadway, corner of Windsor Street.
Brookline Street, corner of Putnam Avenue.
Cambridge Street, corner of Baldwin Street.
Cambridge Street, at Inman Square.
Cambridge Street, near Warren Street.
Cambridge Street, near Windsor Street.
Columbia Street, near Austin Street.

Concord Avenue, near Wyeth Street.
Coolidge Avenue, opposite entrance to Mt. Auburn Cemetery.
Dana Street, corner of Chatham Street.
Fresh Pond Avenue, opposite Vassal Lane.
Garden Street, opposite Linnaean Street.
Gore Street, west from Third Street.
Green Street, near Western Avenue.
Inman Street, near Broadway.
Kirkland Street, near Quincy Street.
Main Street, near Hancock Street.
Main Street, near Portland Street.
Magazine Street, opposite Warland Street.
Mt. Auburn Street, near Athens Street.
Mt. Auburn Street, corner of Coolidge Avenue
Mt. Auburn Street, near Willard Street.
Norfolk Street.
North Avenue, near the common.
North Avenue, near Beech Street.
North Avenue, near Roseland Street.
North Avenue, near Spruce Street.
North Avenue, corner of Norris Street.
North Avenue, opposite Hudson Street.
North Avenue, opposite Tannery Street.
Oxford Street, near Sacramento Street.
Prison Point Street, opposite round house.
Putnam Avenue, opposite school house.
River Street, near Putnam Avenue.
Sixth Street, near Thorndike Street.
Spruce Street, corner of Cedar Street.
Third Street, near Rogers Street.
Thorndike Street, near Third Street.
Walden Street, corner of Mt. Pleasant Street.
Washington Avenue, near Lambert Avenue.
Waterhouse Street, near the common.
Watson Street, corner of Brookline Street.
Western Avenue, corner of Howard Street.

Main Pipe Laid, Number of Gates and Fire Hydrants.

LOCATION.	IRON PIPE.		GATES.		HYDRANTS.	
	Length	Size.	No.	Size.	No.	Size.
	Feet.	Inch.		Inch.		Inch.
Allston Street, cor. Pearl Street.....	..	..	2	6	..	6
Auburn Street, cor. Pearl Street.....	..	..	2	8	..	6
Austin Street, cor. Prospect Street....	..	..	1	6	..	6
Bacon Court.....	200	2	..	..	..	6
Banks Street.....	73	6	..	..	1	6
Beech Street.....	155½	6	..	..	..	6
Belmont Street.....	192	6	..	..	..	6
Bent Street.....	60	8	..	..	..	6
Berkeley Street Place.....	3	1½	..	..	..	6
Berkeley Street Place.....	240	4	1	4	..	6
Berkeley Street, renewal.....	253	6	1	6	..	6
Berkeley Street, near cor. Craigie Street	7	6	..	..	1	6
Broadway, high service.....	149	4	..	..	..	6
Brookline Street, cor. Main Street....	..	..	1	8	..	6
Buckingham Street, renewal.....	77	6	1	6	..	6
Cambridge St. bet. Oak and Prospect Sts.	38	6	..	..	1	6
Cameron Street.....	3	1½	..	..	..	6
Cameron Street.....	497½	6	1	6	1	6
Central Square.....	7	6	1	6	..	6
Chestnut Street, cor. Pearl Street.....	6	6	..	..	1	6
Clark Street Place.....	92	2	..	..	..	6
Clary Street.....	43½	4	..	..	..	6
Conlan Court.....	3	1½	..	..	..	6
Conlan Court.....	218½	4	1	4	..	6
Creighton Street, near Fitchburg R. R.	7	6	..	..	1	6
Crescent Avenue.....	234½	6	1	6	1	6
Crescent Avenue, cor. Walden Street..	..	..	..	..	1	6
Decatur Street.....	..	..	1	6	..	6
Dyke Street, cor. DeWolf Street.....	..	..	1	4	..	6
Dyke Street, cor. Plympton St., renewal	366½	4	2	4	..	6
Eighth Street, cor. Thorndike Street..	..	..	1	6	..	6
Eighth Street, cor. Spring Street.....	20	4	1	4	..	6
Erie Street, cor. Pearl Street.....	..	..	1	6	..	6
Fifth Street, cor. Thorndike Street....	..	..	2	6	..	6
First Street, siphon.....	134	12	2	12	..	6
First Street, from Main Street.....	1,049	12	1	12	1	6
Fiske Avenue.....	53	4	..	..	..	6
Follen Street, renewal.....	1,060	6	2	6	1	6
Follen Street, at angle.....	..	..	..	..	1	6
Fourth Street, cor. Thorndike Street..	..	..	2	6	..	6
Franklin Street, cor. Pearl Street.....	..	..	2	6	1	6
Garden Court.....	36	4	..	..	..	6
Granite Street, cor. Pearl Street.....	7	6	..	..	1	6
Hall Place.....	3	1½	..	..	..	6
Hall Place.....	170	4	1	4	..	6
Hamilton Street, cor. Pearl Street....	..	..	1	6	1	6
Harvard Place, renewal.....	210	4	1	4	..	6
Haskell Street.....	3	1½	..	..	..	6
Haskell Street.....	548½	6	2	6	1	6
Hastings Avenue.....	3	1½	..	..	..	6
Hastings Avenue.....	203	4	1	4	..	6

Main Pipe Laid, Number of Gates and Fire Hydrants.

LOCATION.	IRON PIPE.		GATES.		HYDRANTS.	
	Length	Size.	No.	Size.	No.	Size.
	eet.	Inch.		Inch.		Inch.
Hovey Nursery Street.....	245 $\frac{1}{2}$	6	1	6	1	6
Hubbard Park.....	322	6	..	..	1	..
Hurlbut Street.....	3	4	1	4	..	..
Huron Street.....	3	1 $\frac{1}{2}$	..	..	..	..
Huron Street, cor. Fayerweather Street	8	6	..	..	1	..
Huron Street.....	316	6	1	6	..	..
Inman Street, renewal.....	972	6	1	6	2	..
Kildare Street.....	369	6	2	6	..	..
Lake Street, cor. Pearl Street.....	..	..	1	6	..	..
Lake View Avenue.....	37	1 $\frac{1}{2}$	..	..	..	..
Lambert Avenue.....	44 $\frac{1}{2}$	6	1	6	..	..
Lawrence Street.....	..	..	1	6	..	..
Leonard Avenue.....	733	6	2	6	1	..
Lexington Avenue, Ward 1, high service	531	6	..	..	2	..
Lexington Avenue, Ward 5.....	3	1 $\frac{1}{2}$	..	..	..	..
Lexington Avenue, Ward 5.....	157 $\frac{1}{2}$	6	1	6	..	..
Line Street.....	291 $\frac{1}{2}$	6	..	..	..	..
Linnæan Street, cor. North Avenue...	..	..	1	10	..	..
Lopez street, cor. Pearl Street.....	..	..	1	6	..	..
Magnolia Avenue.....	700	6	2	6	1	..
Main Street.....	3,123	12	3	12	..	..
Main Street.....	74	6	..	..	6	..
Martin Street.....	230 $\frac{1}{2}$	6	1	6	..	..
Mason Avenue.....	3	1 $\frac{1}{2}$	..	..	..	..
Mason Avenue.....	334	6	1	6	..	..
Mercer Circle.....	51	4	1	4	..	..
Mill Street, cor. DeWolf Street, renewal	634	6	1	6	..	..
Mill Street, cor. Plympton Street.....	..	..	2	6	..	..
Munroe Street, cor. First Street.....	..	..	..	..	1	..
Myrtle Avenue.....	294	6	1	6	..	..
Newman Street.....	345	6	1	6	1	..
Niles Place.....	124 $\frac{1}{2}$	2	..	..	..	..
Ninth Street.....	1,006	8	..	..	..	..
Ninth Street.....	24	6	..	..	3	..
North Avenue, cor. Linnæan Street...	14	6	..	..	1	..
North Avenue, near Lancaster Street..	14	6	..	..	1	..
North Avenue, renewal.....	1,254	10	..	..	..	..
Pearl Street, renewal.....	3,061	8	8	8	..	..
Pearl Street.....	330	6	..	..	2	..
Pemberton Street.....	26	6	1	6	..	..
Pemberton Court.....	100	4	..	..	..	..
Perry Street, cor. Pearl Street.....	..	..	1	6	..	..
Plympton Street, renewal.....	679	6	2	6	1	..
Prospect Street, renewal.....	1,103	6	2	6	3	..
Raymond Street.....	242 $\frac{1}{2}$	6	1	6	..	..
Seventh Street, cor. Thorndike Street..	..	..	1	6	..	..
Sixth Street, cor. Thorndike Street....	..	..	2	6	..	..
Sixth Street, cor. Spring Street.....	..	..	1	6	..	..
Sparks Street, cor. Brattle Street.....	356 $\frac{1}{2}$	6	1	6	1	..
Spring St., Third to Fourth Sts., renewal	560	6	4	6	1	..
Spring St., Sixth to Ninth Sts., renewal	625	6	2	6	1	..

Main Pipe Laid, Number of Gates and Fire Hydrants.

LOCATION.	IRON PIPE.		GATES.		HYDRANTS.	
	Length	Size.	No.	Size.	No.	Size.
	Feet.	Inch.		Inch.		Inch.
Springfield Street, cor. Cambridge St.	..	..	1	6	..	6
Spruce Court.....	202	4	1	6	..	6
Summer Street, cor. Inman Street.....	..	..	1	6	..	6
Thorndike Street, renewal.....	1,721	8	4	8	..	6
Thorndike Street.....	152	6	..	..	3	6
Tufts Street, cor. Pearl Street.....	6	6	..	..	1	6
Union Street, renewal.....	745½	6	3	6	3	6
Valentine Street, cor. Pearl Street....	..	..	1	6	..	6
Vine Street, cor. Fourth Street, renewal	307	6	2	6	1	6
Walden Street, siphon.....	84	12	..	..	..	6
Walker Street.....	874½	6	2	6	1	6
Wallace Street Court.....	122½	2	..	..	..	6
Wells Place.....	3	1½	..	..	..	6
Wells Place.....	425½	4	1	4	..	6

The short lengths of one and one-half inch pipe mentioned in above statement were used for blow-offs on extensions that were not connected.

Recapitulation.

	12 Inch.	10 Inch.	8 Inch.	6 Inch.	4 Inch.	2 Inch.	1½ Inch.	1¼ Inch.	Total.
Length in feet of iron pipe..	4,390		1,066	8,808	2,039	414½	30	37	16,784½
Length in feet of iron pipe (renewals).....		1,254	4,782	7,015½	576½				13,628
Number of gates.....	6	1	15	72	12				106
Number of hydrants.....				55					55

New Supplies.

[illegible]

List of Check Valves.

OLD HIGH SERVICE.

	Size in Inches.
Arlington Street, 230 feet west of North Avenue	6
Avon Hill and Linnæan Streets	6
Concord Avenue, 135 feet south from Buckingham Street	6
Fayerweather and Reservoir Streets	6
Garden and Linnæan Streets	6
Lake View Avenue, 150 feet north from Brattle Street	6
Lake View Avenue, 150 feet north from Huron Street	10
Mt. Vernon Street, 100 feet west from North Avenue	6
Mt. Pleasant Street, 150 feet south from Walden Street	6
Raymond and Linnæan Streets	6

NEW HIGH SERVICE.

	Size in Inches.
Appian Way, near Brattle Street	4
Appleton Street	6
Berkeley Street, near Craigie Street	4
Bigelow and Main Streets	6
Broadway, on line of 6 in. pipe crossing College grounds	6
Buckingham Street, near Parker Street	4
Clinton and Main Streets	6
Dana Street, near Main Streets	4
Dana Street, corner of Broadway	4
Dublin Street	6
Hancock Street, corner of Harvard Street, north	4
Harvard Street, corner of Bigelow Street, east	10
Harvard and Ellery Streets (two valves)	6
Harvard and Prescott Streets	4
Harvard and Trowbridge Streets	4
Harvard and Ware Streets	4
Highland Street, on old 12 in. main	12
Kirkland and Cambridge Streets	10
Kirkland Street and Frisbie Place	4
Lee and Harvard Streets	4
Lee and Main Streets	4
Lexington Avenue, near Brattle Street	6
Linnæan and Lancaster Streets (old high service extension)	6
Madison Street and Concord Avenue	4
Quincy Street, near Broadway	4
Waterhouse Street, near small common	6

Statement of Stock on hand, Nov. 30, 1892.

WROUGHT IRON FITTINGS.

	6 in.	4 in.	3 in.	2½ in.	Total.
Bushings	2	3	5	2	12
Couplings		2			2
Elbows	2	9	6	3	20
Flanges	2-4				
Flanges	2-2	1			5
Pipe, in feet		20	7		27
Plugs		5	5	2	12
Nipples	2	15	8	5	30
Reducing couplings	2	5		6	13
Tees		2	2		4

FOR SUPPLIES (GALVANIZED PIPE AND FITTINGS, AND BRASS FITTINGS).

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.	
Air chambers				48	80	44	..
Bushings and reducing couplings...	139	86	91	54	14	2	..
Caps and plugs	44	22	39	32	61	10	..
Chapman drip valves	33	14	7	81	89		..
Check valves	7	2	1	6	2		..
Couplings	29	62	34	105	100	5	..
Crosses	23	12	19	17	10		..
Driving cocks, threaded				32	12		..
Elbows	60	39	27	70	70	5	..
Faucets				11	6	3	..
Fountain cocks					11		..
Goose-necks for blow-offs	1	3		1			..
Hose nipples				10	4		..
Hydrant cocks		25		5	10		..
Lead connections			1	16	10		..
Lead connecting unions				11	16		..
Nipples	60	62	82	167	115	5	..
Off sets	6						..
Pipe, galvanized, in feet	1,240	600	1,840	2,840	4,540		..
Screw cocks	60	33	54	43	90		..
Screw cocks for cement pipe		4		11			..
Self-closing fountain faucets						8	..
Sidewalk cocks			34	88	112		..
Sill cocks					9		..
Sill valves, nickel-plated					2		..
Socket ends of rod							8
Street elbows				69	33		..
Stop and waste cocks	8	12	1	10	2		..
Stop and wastes for flush hydrants						29	..
Tees	21	29	36	39	57	55	..
Tees, reducing	26	5	32	21	48		..
Unions	12	44	39	30	59		..

FOR STREET MAINS (IRON PIPES AND FITTINGS).

	48 in.	30 in.	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.	3 in.	2 in.
Bends		1	2-8	2-8	...	5-8	7-8	6-8	15-8	14-8	...	...
Blow-off branches				1-6	...						...	...
Caps					1	5	5	13	21	20	...	...
Cast-iron plugs		1	1	2	...	...	...	...	...	...	...	...
Clamps for cement pipe				6	...	...	3	...	...	1	...	...
Clamp sleeves			2-6	1-6	...	2	5	8	5	15	8	...
Clamp sleeves			7	4	2	...	...	...	...	...	...	...
Clamp sleeves (Smith's) ..	1-6	1-6	3-6	...	...	...	1-6	...	...	...	...	...
Check valves			2	...	...	1	1	...	...	1	...	...
Crosses				1	...	6	2	5	8	13	2	...
Crosses .....					...	5-4	...	...	...	...	...	...
Crosses					2-6	4-6	6-6	2-6	7-4	...	...	...
Crosses .....					...	1-8	2-8	3-4	...	...	...	...
Drain offsets .....								...	4-12	...	...	...
Drain offsets .....								...	7-24	...	...	...
Elbows			1	...	2	8	6	4	9	12	...	...
Gates .....					...	4	3	10	14	51	1	8
Offsets .....					...	9-12	4-12	10-12	4-6	4-6	...	...
Offsets .....					...	...	...	...	5-12	3-12	...	...
Pipe, in lengths	2	1	1	46	5	56	52	747	14	273	...	...
Reducers				2-8	...	4-6	3-4	33-6	20-4	5-3	...	...
Reducers			1-10	2-12	1-6	10-8	8-8	3-4	...	...	...	...
Reducers .....					...	...	5-6	...	...	...	...	...
Sleeves		1	4	7	1	7	12	7	13	39	5	...
Tees			1	2	2	4	4	6	18	21	2	...
Tees	1-6	3-6	3-6	1-6	3-6	3-6	1-6	10-6	18-4	...	...	...
Tees		1-20	3-12	...	1-8	1-8	...	...	...	...	...	...
Tees			1-8	...	...	1-10	...	...	...	...	...	...
Wooden plugs			2	2	2	4	5	8	26	30	4	2
T branches			1	1-12	...	1	...	...	...	...	...	...
Hawkes' clamp sleeves ..					...	...	4	7	5	7	...	...

Work in Shop and Yard.

3 axes.	2 small derricks.
4 tamping bars.	3 breast derricks.
6 iron bars.	1 Prentiss upright drill.
4 tool bags.	4 hay forks.
2 work benches.	80 large frames and covers for gates.
1 work bench with drawers.	4 small frames and covers for gates.
1 30-inch overflow bell.	55 frames and covers for hydrants.
Lot of blocks and wedges.	3 furnaces.
Lot of bolts and clocks for meters.	1 Atlas engine.
7 pair rubber boots.	2 grindstones.
10 blankets.	2 claw hammers.
6 cock boxes.	3 hand hammers.
6 hydrant boxes.	4 paving hammers.
4 iron boxes.	7 sledge hammers.
50 service boxes.	6 harnesses.

27 wooden boxes.	4 hatchets.
1 thawing boiler and furnace.	2 paving heaters.
2 buggies.	1 floating hook.
1 Goddard buggy.	6 horses.
7 oil cans.	11 wooden horses.
1 tip cart.	2 hoes.
2 casks cement.	1 blow-off hose.
12 chains.	65 feet of $\frac{3}{4}$ -inch hose.
8 chairs.	200 feet of $2\frac{1}{2}$ -inch hose.
4 tool chests.	4 hooks for tapping pipe.
3 grain chests.	16 post hydrants.
1 barrel charcoal.	2 hydrant valves.
1 barrel clay.	6 hydrant bodies.
1 clothes closet.	15 post hydrant jackets.
1 drying closet.	9 post hydrant rods.
1 meter closet.	2 $\frac{3}{4}$ -inch garden hydrants.
2 clocks.	1 lathe with chucks and tools.
3 oil coverings for horses.	1 ladder.
Lot of counters and ratchets.	5 ladles.
1 hay cutter.	45 lanterns.
1 washer cutter.	4 lead kettles.
11 pipe cutters.	1,650 lbs. lead.
500 feet cypress.	8 large malls.
3 machines for tapping cement pipe.	1 wrench rack.
3 machines with taps and drills, for tapping supplies.	146 risers for boxes.
1 Saunders' pipe machine with dies.	13 shut-off rods.
1 Smith drilling machine.	3 buffalo robes.
1 $\frac{5}{8}$ -inch Ball and Fitts meter.	5 lap robes.
1 1-inch Ball and Fitts meter.	3 rope tackles.
1 4-inch Hersey meter.	2 elevating screws.
1 $\frac{5}{8}$ -inch Nash meter.	2 bracing screws.
1 $1\frac{1}{2}$ -inch Thomson meter.	2 sand sieves.
4 $\frac{5}{8}$ -inch Union Rotary meters.	1 sleigh.
2 $\frac{3}{4}$ -inch Union Rotary meters.	8 screw drivers.
2 $1\frac{1}{2}$ -inch Union Rotary meters.	5 saws.
1 2-inch Union Rotary meter.	Lot of block stone.
2 3-inch Union Rotary meters.	2 platform scales.
1 6-inch Union Rotary meter.	48 shovels.
4 $\frac{5}{8}$ -inch Worthington meters.	2 snow shovels.
3 $\frac{3}{4}$ -inch Worthington meters.	335 seals.
4 1-inch Worthington meters.	1 old stove.
2 $1\frac{1}{2}$ -inch Worthington meters.	29 feet shafting with belts and pulleys.
2 2-inch Worthington meters.	Lot of old timber.
7 oilers.	1 saw table complete.
120 lbs. hemp packing.	2 tanks for measuring water.
52 lbs. rubber packing.	1 box hydrant tools.
18 pails.	3 sets main pipe tools.
56 picks.	1 truck.
	1 hand truck.

12 plates with dies.	6 pipe tongs.
Plane, level and square.	1 chain tongs.
228 lbs. lead pipe.	3 trowels.
450 feet thawing-out pipe.	4 bench vises.
2 diaphragm pumps and hose.	3 wagons.
3 hand pumps.	4 cords of wood.
8 thawing-out pumps.	5 blow-off wrenches.
1 Heald and Sisco pump.	3 1-inch cock wrenches.
3 pungs.	5 2-inch cock wrenches.
3 paving rammers.	7 fork wrenches.
20 trench rammers.	6 monkey wrenches.
2 rakes.	11 gate wrenches.
2 ratchets and drills for tapping main pipe.	19 pipe wrenches.
1 meter rack.	4 small tee wrenches.
1 pick rack.	4 flush hydrant wrenches.
1 shovel rack.	Lot of old iron.
	Lot of old brass.

Tools at Fresh Pond.

ON THE WORKS.

1 clay auger.	4 chisel picks.
2 axes.	24 picks.
6 bars.	4 ploughs.
4 lead bars.	1 diaphragm pump.
3 chains.	50 ft. of rope.
4 whipple-tree chains.	2 cross cut saws.
2 tooi chests.	1 hand saw.
6 draught chains.	2 iron scrapers.
1 stone drag.	1 wooden scraper.
3 sledge hammers.	2 sod spades.
1 grab harness.	2 stones.
10 grub hoes.	shovels.
1 levelling instrument and staff.	1 rope tackle.
2 levels.	1 monkey wrench.
2 malls.	2 iron wedges.
2 edging knives.	2 wheelbarrows.
5 pails.	Lot of railroad ties.

RAILROAD TOOLS (ON THE WORKS).

2 tamping bars.	2 spike hammers.
2 heaving bars.	12 shovels.
5 cold chisels.	1 track wrench.
3 rail grabs.	2 monkey wrenches.
	1 gauge.

HOLWORTHY STREET GATE-HOUSE.

1 boat.	4 gravel rakes.
1 gun.	3 shovels.
5 hoes.	4 gate wrenches.
150 ft. hose.	2 blow-off wrenches.
3 lanterns.	1 Stillson wrench.
1 pick.	

BRICK HOUSE, STABLE AND TOOL HOUSE, CONCORD AVENUE.

5 axes.	4 pails.
2 blankets.	1 plough.
2 old boats.	2 force pumps.
1 draw bar.	1 snow plough.
3 iron bars.	1 paving rammer.
3 chains.	2 hay racks.
1 tip-cart.	2 hay rakes.
1 grain chest.	1 horse rake.
1 sod cutter.	3 rope fall.
1 oil covering.	2 hand rakes.
1 curry comb and brush.	100 ft. of rope.
1 fork.	1 post hole rammer.
9 hay forks.	1 post hole drill.
1 grindstone.	2 post hole scoops.
17 tons hay.	1 hand roller.
2 sets of harness.	1 horse roller.
1 horse.	1 hay scales.
1 harrow.	1 screen.
Hooks, rests, etc., for painter's staging.	2 water spouts.
1 wheel jack.	4 scythes and snaths.
4 ladders.	2 shovels.
1 large lantern.	1 sled.
5,000 ft. of lumber.	1 tedder.
1 mall.	1 platform wagon.
1 mowing machine.	3 whipple-trees.
1 oil can.	1 monkey wrench.
200 cedar posts.	1 wagon wrench.
200 lbs. paint.	

Tools at Stony Brook Dam.

1 axe.	1 lawn mower.
1 rowboat and oars.	1 pick.
1 pair rubber boots.	2 piked poles.
1 iron bar.	40 ft. of rope.
2 chairs.	1 rope and falls.
1 ton of coal.	2 steel rakes.
1 watering can.	2 hay rakes.
5 steel drills.	2 30-in. sleeves.

2 hay forks.
1 grindstone.
2 pairs grab hooks.
1 hoe.
2 grub hoes.
1 sledge hammer.
50 ft. of hose.
1 harrow.
1 sod knife.
1 ladder.
1 lantern.
50 lbs. pig lead.
1 ladle.
1 lead kettle.
1 horse mowing machine.

1 stove and fixtures.
14 cast-iron signs.
1 horse sled.
2 sickles.
1 shovel.
2 scythes.
2 snaths.
1 tip-cart and harness.
1 pair iron traces.
1 whipple-tree.
1 wheelbarrow.
2 monkey wrenches.
2 gate wrenches.
2 lengths 36-in. pipe.
12 lengths 30-in. pipe.

REPORT OF THE ENGINEER OF THE PUMPING STATION.

PUMPING STATION, CAMBRIDGE WATER WORKS,
Dec. 5, 1892.

Hiram Nevons, Esq., Superintendent:—

SIR,—I would report the machinery at the pumping station in good condition.

The new high service engine contracted for with the Geo. F. Blake Mfg. Co. has been set up in the basement, and was started at regular work on November 23. It is a compound duplex condensing engine, with independent air pump and condenser, has steam cylinders 14 in. and 28 in., and plungers 14 in. in diameter, with a stroke of 18 in. The engine is nicely finished and is a first-class job in every respect.

The copper top of boiler chimney has been replaced by one of cast-iron, and a wrought iron ladder and copper lightning rods placed on the outside. The chimney has been pointed and oiled.

The underpinning and brickwork of the main building and boiler house have been pointed.

Following will be found a statement of the expenses at the pumping station, with the usual tables.

Respectfully submitted,

EDWIN C. BROOKS,
Engineer.

Statement.

1002 ⁴²⁰ / ₂₂₄₀ tons Cumberland coal @ \$4.38	\$4,889 58
332 ¹⁶²⁰ / ₂₂₄₀ tons Cumberland coal @ \$4.05	1,345 53
Oil, waste, packing, etc.	261 58
Repairs on engines and boilers	84 00
Repairs on buildings and care of grounds	1,070 21
Tools	44 03
Lighting	11 81
Ice	20 00
Telephone	74 25
Expressing	10 00
Salaries	6,192 52
	<u>\$13,503 51</u>

Stock on hand Dec. 1, 1892.

732 tons Cumberland coal, 53 gallons cylinder oil, 45 gallons engine oil, 20 gallons kerosene, 15 lbs. tallow, 25 lbs. cotton waste, 10 lbs. rubber packing, 10 lbs. Usidurian packing, 25 lbs. flax packing, 18 manhole gaskets, $\frac{1}{2}$ quire emery cloth, 10 files, 1 doz. gauge glasses, 50 lbs. soap, 2 brooms, 400 fire bricks, 500 lbs. bolts and nuts, 1 lot iron pipe, 1 lot pipe fittings.

Tools, Furniture and Instruments.

1 18-in. x 10-ft. engine lathe, with chucks, tools, etc., 1 5-in. x 6-in. engine, 1 lot shafting, pulleys and belting, 1 pipe threading machine, with dies, 1 grindstone, 1 emery wheel, 2 vises, 2 vise benches, 3 die plates and dies, 1 set pipe taps, 1 set hand taps, 2 pipe cutters, 14 pairs pipe tongs, 6 screw wrenches, 5 Stillson wrenches, 3 hammers, 1 copper hammer, 20 cold chisels, 1 hand bellows, 24 files, 2 clamps, 2 jackscrews, 2 ratchets, 30 drills, 1 breast drill, 6 steel bars, 2 soldering irons, 4 cylinder head cranes, 18 eye bolts, 75 starting bolts, 1 chain fall, 3 tackles, 2 ladles, 4 wooden horses, 1 oil cabinet, 1 set measures, 1 lot oil cans, 1 oil pump, 1 carpenter's bench and tools, 3 axes, 1 hatchet, 1 lot fire tools, 1 coal car, 12 scoop shovels, 2 wheelbarrows, 1 pair platform scales, 1 tube scraper, 1 forge, 1 anvil, 1 sledge, 6 pairs tongs, 2 hand chisels, 2 lawn mowers, 2 rakes, 1 spade, 1 weeder, 1 pick, 3 forks, 1 ice saw, 1 ice chisel, 4 ladders, 4 stepladders, 200 ft. 2-in. hose and pipe, 50 ft. $\frac{1}{2}$ -in hose and pipe, 1 water cooler, 6 fire pails, 8 water pails, 1 window brush, 1 floor brush, 1 dust brush, 1 feather duster, 1 dust pan, 1 lot matting, 3 mats, 6 spittoons, 1 lot gas fixtures, 1 dynamo, 1 arc lamp, 1 lot incandescent lamps and fixtures, 4 bracket lamps, 4 lanterns, 3 hand lamps, 26 cells Julien storage battery, 1 desk, 2 tables, 12 chairs, 2 clocks, 1 barometer, 1 hygrophant, 1 thermometer, 1 indicator, 2 rain gauges, 1 snow gauge, 1 cot bed and bedding, 1 belt clamp, 1 Hancock inspirator, 1 lot belting.

Engine Record, Pond Levels and Rainfall.

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DATE.	LOW SERVICE ENGINES.						HIGH SERVICE ENGINE.			Total water pumped.	Daily average water pumped.	Total coal consumed.	Daily Average coal consum'd	Average height of pond.	Rain-fall.
	ENGINE NO. 1.			ENGINE NO. 2.											
	Pumping time.	Water pumped.		Pumping time.	Water Pumped.		Pumping time.	Water Pumped.							
	Hrs.	Min.	Gallons.	Hrs.	Min.	Gallons.	Hrs.	Min.	Gallons.	Gallons.	Gallons.	Lbs.	Lbs.	Feet.	In.
December, 1891	369	45	134,303,950				496	00	14,134,349	148,238,299	4,788,332	239,960	7,739	15.22	6.78
January, 1892				372	15	141,687,700	496	00	13,983,590	155,671,290	5,021,584	247,800	7,994	16.12	4.32
February, "	347	45	129,953,450				464	00	13,471,661	143,425,111	4,945,693	226,100	7,797	15.78	2.46
March, "	368	00	138,413,000				496	00	14,658,701	153,071,701	4,937,797	238,100	7,681	15.58	3.56
April, "	359	15	136,224,550				480	00	12,388,589	148,613,139	4,953,771	222,300	7,410	15.87	.77
May, "				387	45	147,027,100	496	00	15,094,598	162,121,698	5,229,732	237,500	7,661	16.35	6.06
June, "				430	30	164,546,250	481	15	15,679,584	180,225,834	6,007,528	248,600	8,287	16.37	4.23
July, "	425	50	166,702,800				500	40	16,686,202	183,389,002	5,915,774	281,200	9,071	14.98	2.53
August, "	436	15	167,550,350				496	30	15,963,994	183,514,344	5,919,818	269,500	8,693	13.11	6.11
September, "	394	45	156,484,350				480	00	15,297,446	171,781,796	5,726,060	262,500	8,750	13.78	1.84
October, "	248	45	97,490,250	164	30	62,374,400	496	00	16,001,191	175,865,841	5,673,092	261,400	8,432	13.43	2.15
November, "				369	45	140,540,950	480	00	14,703,755	155,244,705	5,174,823	255,300	8,510	12.89	4.04
Total	2,950	20	1,127,122,700	1,724	45	656,176,400			178,063,660	1,961,362,760		2,990,200			44.85
Daily average..	8	04	3,079,570	4	43	1,792,832			486,513	5,258,915		8,170		14.95	

ANNUAL REPORTS.

UNIVERSITY OF ILLINOIS-URBANA



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